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EXAMINER

FRONDA, CHRISTIAN L

ART UNIT PAPER NUMBER

1652

DATE MAILED: 09/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/869,067

Applicant(s)

QUAEDFLIEG ET AL.

Examiner

Christian L. Fronda

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

1. In view of applicants' arguments filed 06/20/2005, the provisional election is considered an election with traverse of the invention of Group I. Applicants' arguments that Group I and Group II are the forward and reverse directions of an enzymatic reaction using the same enzyme have been acknowledged but are not persuasive. The examiner maintains the restriction requirement for reasons of record as supplemented below.

Although the inventions recite an acylase, there is no common method step shared between Group I (Invention 1) and Group II (Invention 2). Invention 1 recites contacting a protected N-formyl alpha-aminonitrile, while Invention 2 recites contacting an unprotected alpha-aminonitrile. Since there is no common method step, then there is no special technical feature shared between the inventions. Thus, Invention 1 and Invention 2 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical feature.

2. Claims 1 and 3-12 are under consideration in this Office Action.

3. The objection to the disclosure has been withdrawn in view of applicants' amendment to the specification filed 06/20/2005, where the specification now states that the instant application is the US National Stage filing of PCT Application No. PCT/NL99/00782, filed 12/17/1999, which claims foreign priority under 35 U.S.C. 119(a)-(d) to foreign patent application EPO 98204370.5 filed on 12/22/1998.

4. The rejection of claims 5 and 6 under 35 U.S.C. 112, second paragraph, as being indefinite has been withdrawn in view of Applicants' amendment to the claims filed 06/20/2005.

5. The rejection of claims 1 and 3 under 35 U.S.C. 103(a) as being unpatentable over Romeo et al. in view of Drummond et al. has been withdrawn in view of applicants' amendment to the claims filed 06/20/2005.

Claim Rejections - 35 U.S.C. § 112, 2nd Paragraph

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3 recite the limitation "formylating agent is formic acid, a formic acid amide or a formic acid ester". There is insufficient antecedent basis for this limitation in claim 3 since amended claim 1 does not recite any formylating agent.

Claim Rejections - 35 U.S.C. § 112, 1st Paragraph

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 1 and 3-12 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicants' arguments filed 06/20/2005 have been fully considered but are not persuasive. Applicants' position is that the recited enzymes are recognized in the art for their function, the specification describes peptide deformylases suitable for use in the claimed method, and that one of ordinary skill in the art does not require a structural description of an enzyme to recognize that it can be used in the claimed method. The examiner respectfully disagrees for reasons of record as supplemented below.

In the evaluation of the claims for compliance with the written description requirement of 35 U.S.C. 112, of particular relevance is 66 FR 1099, Friday, January 5, 2001, which states:

"*Eli Lilly* explains that a chemical compound's name does not necessarily convey a written description of the named chemical compound, particularly when a genus of

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compounds is claimed. *Eli Lilly*, 119 F.3d at 1568, 43 USPQ2d at 1405. The name, if it does no more than distinguish the claimed genus from all others by function, does not satisfy the written description requirement because "it does not define any structural features commonly possessed by members of the genus that distinguish them from others. One skilled in the art therefore cannot, as one can do with a fully described genus, visualize or recognize the identity of the members of the genus. *Eli Lilly*, 119 F.3d at 1568, 43 USPQ2d at 1406. Thus *Eli Lilly* identified a set of circumstances in which the words of the claim did not, without more, adequately convey to others that applicants had possession of what they claimed." (see p. 1100, 1st column, line 47 to 2nd column, line 2).

A review of the claims reveals that the recited acylase and peptide deformylase in the claimed method is important and critical to the claimed invention. As previously stated claims 1, 3, and 10-12 are genus claim that is directed toward a genus of acylases that are used in a process for preparing alpha-aminonitriles. Claims 4-9 are genus claim that is directed toward a genus of peptide deformylases including from the class EC 3.5.2.27 or EC 3.5.1.31 that are used in a process for preparing alpha-aminonitriles. The scope of each of these claims include many acylases and peptide deformylases with widely differing structural, chemical, and physical characteristics from many biological sources. Furthermore, the genus is highly variable because a significant number of structural differences between genus members exists.

The recitation of the names of the chemical compounds of each genus (e.g., acylase and peptide deformylase) does not define any structural features commonly possessed by each claimed genus nor define any structural features commonly possessed by each claimed genus. The specification does not describe and define any structural features commonly possessed by each claimed genus. Furthermore, the specification on page 4, lines 19-21, states that the peptide deformylases is composed of proteins with a low level of sequence identity. Thus, one skilled in the art cannot visualize or recognize the identity of the members of each genus.

The Court of Appeals for the Federal Circuit has recently held that a "written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definitions, such as the structure, formula [or] chemical name,' of the claimed subject matter sufficient to distinguish it from other materials." *University of California v. Eli Lilly and Co.* 43 USPQ2d 1398 (Fed. Cir. 1997), quoting *Fiers v. Revel*, 984 F.2d 1164, 1171, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993) (bracketed material in original). To fully describe the genus of genetic materials, which is a chemical compound, applicants must (1) fully describe at least one species of the claimed genus sufficient to represent said genus whereby a skilled artisan, in view of the prior art, could predict the structure of other species encompassed by the claimed genus and

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(2) identify the common characteristics of the claimed molecules, e.g. structure, physical and/or chemical characteristics, functional characteristics when coupled with a known or disclosed correlation between function and structure, or a combination of these. Therefore, the instant claims are not adequately described.

In view of the above considerations, one of skill in the art would not recognize that applicants were in possession of the claimed a genus of acylases and peptide deformylases.

Claim Rejections - 35 U.S.C. § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 4-9, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rajagopalan et al. (Biochemistry. 1997 Nov 11;36(45):13910-8).

Rajagopalan et al. teach the *E.coli* peptide deformylase and a process comprising contacting said *E.coli* peptide deformylase with formylated peptides (see entire publication especially *Deformylase Assay* section p. 13912 to **Discussion** section p. 13916).

Claims 1, 4-9, 12 differ from the teachings of Rajagopalan et al. in that the taught process does not use formylated alpha-aminonitriles.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Rajagopalan et al. such that the *E.coli* peptide deformylase is contacted with mixtures of enantiomers of chiral formylated alpha-aminonitriles known in the prior art. One of ordinary skill in the art at the time the invention was made would have been motivated to do this as an alternative for chemical deformylation of formyl protected alpha aminonitriles

One of ordinary skill in the art at the time the invention was made would have a reasonable expectation of success since Sonke et al. (Journal of Molecular Catalysis B : Enzymatic 29

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(2004) 265-277; publication used as evidentiary reference) provide evidence that the *E.coli* peptide deformylase can deformylate aminonitriles including *N*-formyl-phenylalanine nitrile, *N*-formyl-valine nitrile, and *N*-formyl-*m*-methoxyphenylalanine nitrile (see entire publication, especially pp.271-273, and Table 4).

Groche et al. (Biochem Biophys Res Commun. 1998 May 19;246(2):342-6; PTO 1449 dated 03/12/2002) provide evidence that the *E.coli* peptide deformylase contain either iron or nickel in its active site (see entire publication; publication used as evidentiary reference).

Accession AAC76312 (Blattner et al.) provide evidence that the *E.coli* peptide deformylase contains the sequence HEXXH at positions 133-137, EGCLS at positions 89-93, and GXGXAAXQ at positions 44-51 (see attached sequence publication).

No patentable weight is given to the preamble of the process claims since it merely recites the purpose of these process claims. Thus, the process steps taught by the modified process of Rajagopalan et al. teach the process steps of the claims and would inherently produce the corresponding unprotected alpha-aminonitriles.

Conclusion

12. No claim is allowed.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

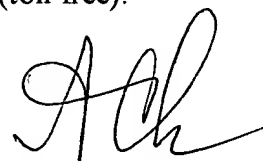
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian L Fronda whose telephone number is (571)272-0929. The examiner can normally be reached Monday-Friday between 9:00AM - 5:00PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapura N Achutamurthy can be reached on (571)272-0928. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CLF



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